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AMERICAN CINEMATOGRAPHER

THE MOTION PICTURE CAMERA MAGAZINE

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NO. 8

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ON THE FRONT COVER—Karl Fireard, A.S.C., checks final light meter reading for the Balboa and Jubet balcony scene in "Many Hagen," Warner Bros. production starring Shirley Temple. Latter is shown on the balcony with Fireard, while Ray Montgomery portrays Romeo.



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A New Color Tester For 16mm Kodachrome Duplicates

By WILSON LEAHY, A.S.C.

(Acme Film Laboratories, Hollywood)

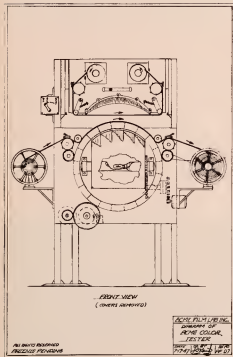


Diagram of 16 mm Kodachrome color tester designed by Acme Film Laboratories

YEARS ago, the writer was made painfully conscious of a sign erected just inside the main gate of what was then the largest motion picture studio in the world. It read, "Being an expert in making the most of the tools you have, however inadequate." The precept was no doubt inspired by the necessity of making a little go a long way in those early days of picture processing. At any rate, to one then engaged in film processing, the sign carried a special significance, due principally to the fact that the tools supplied and considered adequate by the management generally consisted of a hoe, a rubber band and sweat supplied free by the employee.

In many ways there is a marked analogy when comparison is made of the printing and processing of black-and-white in the early twenties and the commercial printing of Kodachrome duplicates today. It can be stated, and proven, that in at least one phase of the operation, the technique employed today is not as advanced or efficient as the earlier catch-as-catch-can methods of the silent days. Specifically that phase is timing of the print.

Most of our conclusions are based on experience and the result of long observation. This is particularly true of photographic processes, which are concerned and then refined by tedious trial and error, until controls are established and optimum quality obtained. The timing of a print in film laboratory procedure has always been a delicate operation, requiring exact coordination of chemical, mechanical and human factors. Without a lengthy dissertation it can be accepted as fact that the operating economy—and the very reputation of a film laboratory—rests on such coordination, and that furthermore, in all the multifarious aspects of the camera-to-screen application of photographic technique, the timer stands the highest in importance.

Years ago all timing was done by eye. There was no predetermination of density by the use of a graduated strip such as a Cinex test. Development of negatives and positives was by visual examination as well, and developing times were affected first by the fact that a cameraman had no standards to which he could tune his exposure and second by the inevitable errors of eye development. The result was negatives of dissimilar density and contrast and the confusion was further aggravated by eye timing of the print. When the Cinex Tester was adopted, some alleviation was found, at least to a degree that one human factor was eliminated and the usual blurring appearing film took on some semblance of craftsmanship. In the end it was applied sensometric and pH controls which brought relief by stabilizing solutions, but the graduated strip for timing is still the dominant element in print uniformity.

It can readily be seen by the foregoing that it required time, ingenuity, and

(Continued on Page 276)

"ODD MAN OUT"

Suspense In Black and White

By HERB A. LIGHTMAN

IN a review of the current Universal-International release, "Odd Man Out," Life magazine's usually conservative reviewer writes over the traces to observe: "Few movie-makers will see 'Odd Man Out' without being envious, and few movie-goers will leave the theatre without being impressed."

Critics both here and abroad have been even more outspoken in their praise of this fine British film, comparing it favorably to John Ford's masterpiece, "The Informer." They heap well-deserved praise upon the shoulders of director Carol Reed ("The Stars Look Down," "Night Train," "The True Glory"), and leading man James Mason ("The Man in Grey," "The Seventh Veil," "Wicked Lady"). They agree quite unanimously with press releases that call the film: "an adventure in unbearable suspense."

Actually, it is far more than that. It is a *tour de force* of creative cinema—probably the finest example of pure filmic mood to hit our screens so far this year from England.

Story Behind the Script

"Odd Man Out," adapted from the F. L. Green novel of the same name, is a moral melodrama woven upon a framework of that most stimulating of dramatic devices, the chase. It is the under-story of Johnny MacQueen, Jesuitic leader of an Irish revolutionary organization, who accidentally kills a man during a mill robbery and is recklessly

persecuted by the police for a hair-raising eight hours, finally being killed at mid night just as he is about to make his escape.

The film is a drama of character rather than plot. The protagonist, a sympathetic but rather neutral personality, is the catalyst to a number of intensely sketched situations. As he flees from one "dusky" refuge to another, he encounters characters (expertly interpreted by the Abbey Theatre Players) who personify a wide gamut of human emotions: fear, love, hate, loyalty, greed and duty.

Thus it is that the film takes on an allegorical symbolism which lifts it far out of the category of mere chase melodrama. Its stature as cinematic art springs from the professional integrity of director Reed and cinematographer Robert Krasker, both of whom were intent upon holding a mirror up to Nature—no matter how unpleasant that might be.

Imaginative Camerawork

The photography in "Odd Man Out" is of an excellence that prompted Life's reviewer to write: "There has not been such lighting and imaginative use of the camera since Owen Weller's 'Citizen Kane'."

Indeed, the camerawork in the photography is pretty much in a class by itself. It is a fine blend of realism and technical smoothness. It is a separate artistic entity—and yet it merges smoothly with direction, script and action to result in a perfectly blended production. Krasker's

photography is alive with a vital realism, yet unlike the harsh documentary brand of realism, it has depth and finish.

A good bit of the action was filmed in Belfast and in the streets of suburban London. Here, art direction could not achieve its usual miracles as compositionally ally to the cinematography—yet Krasker, by intelligent placing of his camera, evolved some striking compositions. He took full advantage of the converging lines formed by rows of urban tenements, of reflections shed by street lights onto damp pavement, of the web-like shadow patterns cast by catwalks and fire-escapes.

Unlike many cinematographers, he did not commit the artistic error of over-lighting his night street scenes. Rather, he spotted in highlights at specific areas, allowing the remainder of the composition to go appropriately dark. One of the most dramatic sequences in the film is that in which the main character is forced to take refuge in a brick air raid shelter. The only light source is a patch of moonlight reflected through the doorway of the shelter. The remainder of the set is thrown into darkness of such a low key that you *sense* rather than *see* the figure cowering against the wall. It would have taken an unmotivated light source to adequately light such a set, but the cinematographer preferred his own pure type of undiluted realism to any such forced device. The sequence is much stronger for it.

The use of the camera to create sus-



One of the tense dramatic moments from "Odd Man Out." (Left) This setup is typical of the wide-angle perspective and overlighting which add so much to the force of action. At right soft low-key lighting provides a tender-yet arid atmosphere for interview of "Odd Man Out." Former self-portraits, the camera work in this fine British production helps create a moral melodrama with the suspense of the chase.



(Left) On the set of the Universal-International release, *Old Man Quid*, starring James Mason, with camera crew preparing to shoot a close-up, faded reel in the camera is Director of Photography Robert Krasker, whose operating assistant, Gerald Thompson, makes adjustments through the viewfinder and director Cecil De Mille (extreme right) prepares to start the action. At right, the same sequence as it appears on the screen. Flaming red and blue photographic techniques combine to make this J. Arthur Rank production an outstanding photograph.

sense is admirably demonstrated in the film's opening sequence, during which the band of revolutionists drives to the locale of the robbery, robs the mill, and then drives frantically from the scene of the crime. Here, intercutting of extreme close-ups of the main character's face with weirdly angled shots through the windshield of the rushing automobile creates a pattern of mounting expectancy.

As the gang flees from the scene and the main character, half in and half out of the car, hangs precariously out the door, a subjective use of the camera sharply conveys his sense of panic. We see the whirling panorama as it looks to him, dramatic angles of his brethren as they try vainly to pull him into the car, the sweating face of the panic-stricken driver too terrified to slow down.

Lighting and Camera Angles

The photography in *"Old Man Quid"* achieves its powerful impact through a combination of low-key lighting, wide-angle compositions, and low camera angles.

The picture's somber theme makes it definitely a low-key subject. Much of the action takes place at night, both in the streets and in dimly lit interior settings. The darkest scenes are highlighted by simple, direct light sources, forming dramatic patterns of darkness edged with light. Interior sets are lit to simulate light sources such as lanterns, gas lamps, etc. This style of lighting is emphatic because it concentrates audience attention at the focal point of action. Cross-lighting, used quite frequently throughout the film, gives depth and texture to the subjects.

Particularly effective is the use of low angles in dramatic sequences of the picture—especially those which concern the main character, Johnny MacQueen. While the film does not take sides in the political struggle about which the action

revolves, it does portray the central character as an idealistic, almost heroic figure—a man of purpose and dignity. The low angles used in photographing him serve the psychological purpose of enhancing this impression. He is given added stature; he looms importantly into the scene and dominates the action.

The wide-angle lens, too, is employed with extraordinary skill. Its use in the chase sequences forces the perspective of long, labyrinthine tunnels and alleyways, creating a veritable maze of frustrated escape for the protagonist, and deftly shifting foreground objects to form powerful compositions.

Although camera movement is held to a minimum, its use in various sequences is smooth and skillfully paced to the action. The photography depicting the main character's hallucination in the artist's studio is perfectly motivated and very well executed from the technical point of view.

The Man Behind the Lens

Director of cinematography on *"Old Man Quid,"* Robert Krasker, is a young man whose talent with light and shadow has earned for him the recent title of "Lighting Expert." It is with this designation that he filmed such recent British film successes as *"Henry V.,"* *"Caesar and Cleopatra,"* and *"Brief Encounter."*

Born in Australia of French and Austrian parents, Krasker received his early schooling in Paris, and intended there to study art. After a brief stint with painting, he decided that the camera was his best artistic medium and went to Germany to study optics, later returning to Paris where Phil Tannock, supervising technical director of Paramount's Juvenile studios, gave him a job as an assistant cameraman. Here he worked under the American "art" Tannock, for his fundamental training.

In 1931, he went to England's Elstree studios as operating cameraman for Alexander Korda. He stayed with Korda

for ten years, during which he operated on such films as *"Hesey the Eighth"* and the H. G. Wells fantasy, *"Things to Come."*

It was then that history repeated itself in Krasker's career. Just as it was an American cinematographer who gave him his first camera assistant's job—it was also an American producer in Britain who realized that Robert Krasker was ready to take on his first assignment as director of cinematography. Hollywood producer William S. Paley, who was making *"The Saint"* series in England, gave Krasker the job of photographing one of them.

He did so splendidly a job that he began to receive increasingly more important assignments. He photographed two of the late Leslie Howards' last films, *"The Gentle Sex"* and *"The Long Still Burn"*—after which he was assigned by the J. Arthur Rank organization to photograph Laurence Olivier's monumental production of *"Henry V."* It was Krasker's dramatic camera angles and striking Technicolor lighting which added so much to the epic sweep of this Shakespearean film.

His next assignment was *"Caesar and Cleopatra,"* in which partial lighting did so much to create the desired mood. His last picture before *"Old Man Quid"* was the Cinequad production of Noel Coward's *"Brief Encounter,"* a film characterized by an extremely artistic type of soft low-key lighting.

Over the individualist, Krasker has no set style of photography, but prefers to key his cinematic treatment to the particular demands of each subject. He has a definite feel for depth and form which is evident in the three-dimensional modeling he manages to impart to a subject. His early artistic training has given him a flair for composition which brings out the forceful best in each screen situation. But above all, it is his skill in lighting that has made him one

(Continued on Page 284)

THE first museum for the display and demonstration of historical landmarks in the progress of the art and science of all branches of photography, will be established permanently in the palatial Georgian Colonial home of the late George Eastman in Rochester, N. Y. Joint statement announcing the project was made recently by Alan Valentine, president of the University of Rochester, and Thomas J. Hargrave, president of Eastman Kodak Company.

Institute, to be known as George Eastman House, Inc., will be set up as an educational center to serve as an instruction and demonstration project covering photography from its earliest beginnings to its latest developments. In it will be placed the invaluable historical photographic collection assembled over a three decade period by Mr. Eastman and later by Eastman Kodak Company—recognized as the most complete in the world, and covering the entire photographic field.

Anticipated to be in operation within two years, the institute will be more than a museum; as it will also provide a "dynamic demonstration of the history and continuing progress of photography in all its stages." Sponsors hope that it will be "an instructive and internationally renowned collection of photography from its inception through the latest apparatus, processes, and products, and the most interesting historical institute of photography in the world."

At the time of his death, Mr. Eastman willed the 37 rooms, three story, fireproof residence with 10 acres of landscaped grounds—together with a \$2,000,000 endowment fund for maintenance—to the University of Rochester as a base for the University's president. In turning over the home for the museum, the University will provide other quarters for its president and family.

Structural and architectural changes will be held to a minimum; the architectural staves, while not of such changes, museum contents, and exhibits estimated at \$300,000 value—plus operating cost of about \$100,000 annually—will be contributed by Eastman Kodak Company for minimum period of five years.

Through charter issued by the New York Board of Regents, the institute will be operated as an educational corporation under a board of trustees composed of seven members. This board will be responsible for establishing and operating the institute as a working, teaching enterprise "to instruct in the progress of photography as the world's most facile medium of communication" and "to show how photography plays a manifold part in the progress of nearly all human activities."

Indication of the close interest, although unofficial, that exists between Eastman Kodak Company and University of Rochester is seen in the members of the board for Eastman House, who comprise: Raymond N. Hall, president of Lincoln Rochester Trust Company; Albert K. Chapman, vice president and general manager of Eastman Kodak; James E. Gleason, president of the Gleason

HISTORICAL MUSEUM AND INSTITUTE AT EASTMAN HOUSE



Works, Thomas J. Hargrave, president of Eastman Kodak, Charles F. Hutchison, Kodak executive; Dr. Albert Koster, city health officer of Rochester, and University president Valentine. All but Chapman are University trustees.

President Valentine stated "No memorial could express more appropriately the respect and gratitude we feel toward George Eastman; and no finer use could be made of the home he created and built. It will, we hope, make George Eastman House a cultural center for Rochester and far beyond and a center of those photographic arts of which he was the chief creator. Under this plan, the house should be a living, active, constantly developing cultural force carrying forward the very arts which Mr. Eastman in his lifetime so nobly advanced."

Mr. Hargrave, Kodak president, expressed the belief that George Eastman House would draw visitors from all parts of the world and said:

"We anticipate that it will become a focal point for national and international conferences on the art and science of photography for meetings of many in-

terested groups; for regular educational tours for the school children of Rochester and other communities; for meetings of camera clubs, photographic societies, and other organizations; for exhibitions of the best local, national, and international photographic salons; for demonstrations of the latest apparatus and processes, and for other allied purposes.

"Such an institution with exhibitions, demonstrations, and motion pictures of photographic processes will surely be a magnet not only of the pictorial world, but also of the growing number of people interested in the uses of industrial photography, of photographic magazine editors and technical editors of the press, and other amateur snapshooters."

Scope of Eastman Kodak Company's historical photographic collection embraces the entire photographic field, according to University board of trustees chairman, M. Herbert Eisenhart, who said "It covers the development of cameras, lenses, and other apparatus; motion picture equipment of all kinds; apparatus for manufacture, testing, control, and research; specimens of all types of photographic processes from the earliest days and also pre-photographic devices such as camera obscura; a very extensive collection of material on the development of color photography; historically important literature; and scientific and technical applications of photography."

Many features of interest, Eisenhart disclosed, include the large collection of Daguerrestypes, Calotypes, the unique collection of wet collodion outfits, albumen prints, large groups of 19th century carded and miniature cameras, and the photographic albums of Victor Hugo, Napoleon III, and Queen Victoria. Historical material shows the development of dry plates and plate cameras, roll film and bell-film cameras, lenses, printing processes, the motion picture camera and projector, and material for color photography. Eastman Kodak will make available a 25,000 volume photographic library—the most complete in existence.

Mr. Eastman's personal benefactions in the fields of education, music, and medicine, for various humanitarian projects, totaled about \$100,000,000.



How a professional photographer of the 19th period operated his "petrified" wet plate camera also contained a laboratory, where plates had to be developed immediately following exposure. This camera is one of the many in the Eastman collection.

GEORGE EASTMAN

His Significance In Photography



In the fall of 1877, a young Rochester bank clerk dipped into his hard-earned savings, bought \$94.36 worth of "sandries and lenses," and paid a local photographer \$5.00 for lessons in "the art of photography."

Luckily, the enthusiasm that impelled the 23-year-old George Eastman to make these investments was not fleeting. He was planning a vacation. Someone suggested that he should take some pictures of his trip. He liked the idea—and when Eastman liked something, he followed it through.

Picture-taking in those days was by no means as simple as it is today. You didn't just take a camera with you; rather, you accompanied the outfit of which the camera was a part—if you were lucky enough to have some means of transport. Otherwise, you toled, pack-horse fashion, a tramping man—and team—of equipment that included: a bulky camera and stand; heavy glass plates that had to be unscrewed immediately before exposure; bottles of solutions for preparing the plates; a nitrate bath; a water container; and a dark tent in which to sen-

sitize the plates, load them in plate holders, and develop and "fix" them after exposure.

They called it "portable," this cumbersome paraphernalia of the photographer of the 70's. George Eastman gave it a try, and intended to do something to lighten the load. He began a thorough study of photography and subscribed to the leading photographic publications of that time.

In an English magazine, he read a discussion of the possibilities for gelatin dry plates to supplant the wet plates and make photography less laborious. Soon he was experimenting.

His mother's kitchen sink was the first Eastman "research laboratory." His dry plates were so successful that he decided to market them. By 1880—within three years of his taking up photography as a pastime—he was in business for himself, a one-room, one-helper business on the third floor of a State Street waste store. He worked in the bank during the day, prepared his emulsions at night, and coated the glass plates with an apparatus he devised.

Within seven years, George Eastman was manufacturing a roll film. Plates of any kind, wet or dry, were no longer necessary for the amateur photographer.

And within eleven years, a sizeable percentage of the population of the civilized world had either taken a snapshot or been the subject of one.

George Eastman had achieved his goal, the simplification of photography. In doing so, he had introduced an entirely new system: the Kodak system.

The most famous Eastman products is, undoubtedly, the Kodak. The first model was a simple oblong box. It included an instantaneous shutter which was set by pulling a string and released by pressing a button. The camera took round pictures, two-and-a-half inches in diameter and it was loaded for 100 exposures. The price, complete, was \$35. When you had exposed a roll of film, you sent the Kodak back to the factory, along with your check for \$10. There the film was removed, developed, and printed, your centers reloaded and returned to you along with the prints. "You press the button, we do the rest," put the simplicity of the operation into a neat phrase that became the first Eastman slogan.

In 1888, a year after the Kodak made its bow, Eastman and his staff discovered a practical method of producing first introductions: a transparent, flexible film. The invention not only laid the foundations of amateur and professional photography in their broadest senses but also made possible the motion-picture industry.

Thus, by the turn of the century, George Eastman had revolutionized photography and made picture-taking a delight for the millions rather than the headache, time-consuming pursuit of the few.

Such, very briefly, were the beginnings of modern photography and the initial

(Continued on Page 299)



The George Eastman Colonial home in the late George Eastman in Rochester, N. Y. (left) will soon house the most complete photographic collection in existence as a permanent museum. At right, Mr. Eastman, founder of modern photography, and the late Thomas A. Edison, creator of the motion picture camera, share the garden in the Eastman House grounds in 1935.

HISTORICAL DEVELOPMENT OF SOUND FILMS

By Earl I. Sponable

(Twentieth Century Fox Film Corp., New York)

PART 2.

(This most informative paper was presented by the author at the October, 1946, convention of the Society of Motion Picture Engineers in Hollywood; and published in the April, 1947, issue of the SMPTE Journal. It is repeated through permission of the SMPTE, and, because of extended length, will be presented as three or more parts.)

Part 2. The Work of Case and de Forest—1911-1922

The results secured by the early workers were, by invitation of existing equipment, rather crude and did little more than demonstrate the principles of sound recording and reproduction. It was Theodore W. Case who, more than anyone else at this time, began to realize that, if sound pictures were to serve as a medium for entertainment, it would be necessary to perfect the system to such an extent that the illusion created in the reproduced sound and pictures be good enough to make one forget the mechanics of the system and think only of the event portrayed. Accordingly, in putting together the Case system each step was studied and developed with the idea of incorporating the best engineering practice available at the time. The way was made easier because of the developments made during the first World War, including improved microphones, better vacuum tubes, amplifiers, loudspeakers, etc.

1911. Case began experimenting on sound recording while a student at Yale. In a letter to his mother, Jan. 22, 1911, he writes: "Most of my time now is taken up in experimenting with my Selenium Cell with the idea in mind of photographing sound waves and using the positive as records for a new kind of Phonograph or rather it would be called a Lithograph I suppose."

And on Feb. 12, 1911 he writes: "Yesterday I at last succeeded in transmitting sound by light. I used the principle of the manometric flame. The eye could not detect the variation of the light at all but it was registered perfectly in the varying of the resistance of the selenium. The reproduction of the voice was perfect. Next, I have to set up an apparatus for my diaphragm photographing of the light variations. It is very interesting

work and gives me something to do tonight."

1913. Case began experimenting at Auburn, New York, and devoted himself to trying to find a practical means of converting light into electricity.

1916. E. I. Sponable, upon graduating from Cornell, joined Case and with him started the Case Research Laboratory. Case's experimental work was moved from the cellar of his home at 106 West Genesee Street to a new laboratory designed by Sponable and built at 214 West Genesee Street. A three-stage audio amplifier was purchased from the de Forest company. This was used to test a large number of crystals and materials for the property of changing resistance when illuminated. About nineteen new substances were found and studied. It was at this time that Case first met de Forest.

1917. The "Thalofide" Cell (containing a light sensitive change-of-resistance material similar to selenium but a form of thallium oxy-sulfide particularly sensitive to infrared radiation) was discovered. This was used as the receiving element in an infrared signal and communication system, developed for and used by the Navy during the first World War. During this time the Case Research Laboratory, working in conjunction with the Naval Experimental Station at New London, Connecticut, was entirely devoted to war work and earned an extensive research in the transmission and amplification of speech and signals in connection with its infrared system.

1918 to 1921. De Forest began work on talking motion pictures. He filed patent applications on methods of recording in 1918, and during 1922 carried on experiments in Germany trying to record sound by modulating a high-frequency gas discharge tube.

1920 to 1922. Case discovered the barium photoelectric cell and began its development. In its final form it was used in a recorder for making permanent records of the light variations of daylight and sunlight.

1923. De Forest purchased Thalofide Cells from the Case Research Laboratory.

Oct. 1922. Case saw de Forest in New York regarding extraneous noises in

Thalofide Cells that de Forest was trying to use for reproducing sound.

Oct. 1922. Case, while in London, witnessed a demonstration of Barken's experiments in sound recording.

Nov. 1922. Upon his return from abroad, Case was invited by de Forest to visit his studio. De Forest spoke of trouble he was having in trying to record sound with high-frequency discharge tubes. He exhibited and reproduced a short piece of sound film. This was barely understandable. He apparently was ahead at the stage he speaks of in his SMPTE article—"I will remember the grim satisfaction I felt when, for the first time in reproducing a photographic record of my voice, I was able clearly to determine whether or not it was being run backwards!"

Nov. 1922. A crude sound camera was made at the Case Laboratory and a sound picture made of a modulated oxy-acetylene flame. This was the same manometric flame that had previously been developed for use in infrared telephony.

De Forest at this time tried recording with tungsten filament lamps with practically no success. Case suggested to him the use of a hydrogen-filled lamp as having faster reaction. The Case Laboratory made up several hydrogen-filled flash-light lamps for de Forest, and also tried some of them for sound recording using a four-stage amplifier. The results were poor because of the large amount of unmodulated light.

Dec. 1922. De Forest's relations with Case are indicated in the following excerpt from a letter from de Forest to Case:

"As per our telephone conversation I am mailing you today six blanks, two of each capillary diameter. Kindly fill these with nitrogen and exhaust as soft as possible, i.e. to give them maximum brilliancy and minimum voltage. Paint with bronze the two bells at each end of the tube and wrap same carefully with tinfoil and glass. Then apply to these terminals alternating high voltage.

"I hope you can get three tubes to light up at 3000 or 4000 volts. You might put in a needle spark gap in shunt as approximate voltage indicator.

"I suggest that you put a drop of mercury in some of these tubes to see if this does not considerably soften the discharge, at least when the tubes get hot enough to liberate the mercury. I am also requiring you to be so good as to make up two or three ballast resistances using very fine tungsten filament and hydrogen gas. Believe that the bulb lamps are usually filled with hydrogen at atmospheric pressure, but am not informed on this point.

"I believe if I can get a proper ballast system in series with the short filament lamp I can record the voice photographically by this means. This, of course, is an ideally simple matter compared with the high-frequency light.

"I shall await receipt of these tubes and your further suggestions with great interest."

1922 Case found that the gas discharge in an argon-filled vacuum tube whose filament was coated with alkaline earth oxides could be easily modulated at a low voltage, and it seemed to Case suitable for sound recording purposes. This tube had been previously used in his infrared signal system. This observation led to the development of the Aero light, and was a big step in making this system of sound recording practical. Prior to this discovery by Case, de Forest had been using nitrogen-filled tubes operating on a high-frequency circuit at 3000 to 4000 v and giving a very faint photographic light output. The Aero light operated on direct current at 200 to 400 v, and gave off radiation which was highly acting.

1922—A Powers projector was converted into a sound camera at the Case Laboratory. Also the Aero light was improved by using helium gas instead of argon, thus increasing its active light. Soon it was found that these recording lights could be operated without heating their cathodes.

The following abstracts from the Case Research Laboratory records indicate the stages in the development of sound recording during the period from 1923 to 1925, inclusive.

Jan. 18, 1923: A conference was held among Case, Sponable, and Thompson (patent attorney for Case) to discuss the patentability of Helio light (later named Aero light).

Jan. 11, 1923: It was found that zinc-oxide coated filaments in vacuum tubes were not good for sound recording and that a cathode discharge was more desirable.

Jan. 13, 1923: Case wrote to Dr. Forest telling him that oxides in the recording lights effected an improvement when the filaments were operated cold. Later it was found that this oxide coating was photo-active.

Jan. 26, 1923: A letter was received by Case from Dr. Forest about the lights containing oxides. It also mentioned trying two small ball electrodes, oxide coated. This proved impractical because the area was not great enough on small ball electrodes and an arc discharge started too easily.

Feb. 10, 1923: Case suggested to Dr. Forest that he remove the lens from the Helio light system to get rid of "blasting" he had been getting.

Feb. 14, 1923: A new sound camera designed by Sponable and built by the Precision Machine Company of New York was completed and first tested. Sound records were made with good results.

Feb. 23, 1923: Case and Sponable visited the Dr. Forest studio in New York. Dr. Forest's first combination of pictures with sound was seen and heard. There were made using Case Helio lights. The forming of a company was discussed and a contract permitting Dr. Forest to make commercial use of Aero lights and Thakodide Cells was negotiated but not signed.

Mar. 3, 1923: Dr. Forest notified Case he had completed eight combination pictures.

Mar. 13, 1923: Dr. Forest exhibited his sound motion pictures to newspaper men at his New York studio. At this exhibition, the sound system included a Case helium-nitrogen filled barium-oxide-coated recording lamp operating on direct current at low voltage and giving a moderately concentrated glow on the plate cathode. A Western Electric amplifier provided the driving power for the Helio light. The Case Thakodide Cell was used in the reproducing system. Dr. Forest, in his discussions with the press, referred to the Case Helio light as his "Photron." The reproduced sound showed had mechanical action and poor quality.

Mar. 14, 1923: Case suggested, in connection with his recording lights, the use of an oxide-coated filament as a cathode. This resulted in more light and longer life.

Mar. 17, 1923: Dr. Forest wrote to Case saying that the latter's efforts "to improve his photon light were well justified as Phonofilm could be brought out soon" and that Case was entitled to broad claims on the oxide coated filament. Dr. Forest said he would give Case full credit for work done in perfecting his Photon tube.

Apr. 4, 1923: Dr. Forest gave a demonstration of his sound pictures before the New York Electrical Society. In describing his recording light he stated he was using a high frequency gas light; he gave Case credit only on the Thakodide Cell, and for valuable suggestions and improvements to "Phonofilm."

Apr. 15, 1923: The first public exhibition of Dr. Forest's "Phonofilm" was given at the Rivoli Theater, New York.

Apr. 18, 1923: Case perfected the Thetaphone for use as a microphone. This was used in making many of his early sound records.

May 7, 1923: It was found that helium purified in a vacuum arc further lowered the operating voltage of Helio lights.

May 14-14, 1923: Case and Sponable visited the Dr. Forest studio and observed weaknesses in Dr. Forest's methods of sound recording and reproduction.

June 28, 1923: The Precision Machine Company rebuilt Case sound camera in an effort to reduce the amount of flutter it was causing in the recording of sound tracks.

July 3, 1923: A letter received from Dr. Forest said that the Case Helio Photon light "had gone bad." It had been in use since May 7, 1923, and the letter raised the question as to whether it should be re-coated. Dr. Forest suggested that adding a trace of mercury would avoid certain Helio patents.

July 11, 1923: Dr. Forest cited a German patent which contained an admission that it is old in the art to use a discharge containing metallic vapor. Dr. Forest used this patent on which to base his belief that any existing patent difficulty could be avoided by introducing mercury. It was possible that the coated

electrode of the Aero light producing green barium vapor in the discharge would be equivalent to introducing a metallic vapor.

Aug. 16, 1923: The contract referred to under date of February 23, between the Dr. Forest Phonofilm Company and the Case Research Laboratory, was consummated. This contract granted Dr. Forest a commercial license to use Aero lights and Thakodide Cells in taking and reproducing sound pictures.

Aug. 21, 1923: The following quotation is taken from the Case Laboratory notes: "A trip was made to New York for the purpose of aiding the Dr. Forest Phonofilm Company in setting up the 9-A amplifier and also to test out the Case air-thermo microphone under studio conditions. A comparison of the static microphone using the old set-up previously made at the studio with the same microphone using the 9-A amplifier was made. Three test films were also compared with a film made using the air-thermo microphone on the 9-A amplifier system. At New York, it appeared that the voice reproduction on the air-thermo microphone was slightly better and clearer than the records made using the static microphone. The film when run at this laboratory, seemed to indicate that there was little difference in these films; if anything, the static microphone was of slightly better quality.

"Dr. Forest was shown our method of wiring up the 8-A and 9-A amplifiers for reproducing. This system was a great improvement over the two 7-A boxes which he was using. This improvement was in quality rather than loudness.

"A number of experiments of the talking moving pictures were witnessed at the Phonofilm studio. These indicated that the product had been greatly improved over the old films seen on previous trips. In the case of music records the film from this laboratory seemed to be of slightly better quality than those shown there." Both Case and Sponable were present during these conferences.

Oct. 4, 1923: Dr. Forest informed the Case Laboratories that he now had twenty-five films worthy of exhibition in theaters. Did we have a supply of Aero lights?

Nov. 14, 1923: Dr. Forest mentioned a recording he had made of a speech by Dr. F. C. Cress, saying "we can understand every word first time through."

Dec. 7, 1923: Dr. Forest said that the thermo-microphone supplied him by Case was "wonderful," and that the Aero light was "working fine."

Jan. 23, 1924: For recording sound, Dr. Forest had originally used an optical system imaging the glow discharge on a slit of the order of three mils wide; it now occurred to him that a narrower slit, say 1.5 mils, might be better. He recognized the problem of getting sufficient light with the narrower slit.

Jan. 1924: Sponable had considered the red-iron problems involved in converting a Bell and Howell camera for recording sound on the same film with the picture. Bell and Howell was authorized to

rebuild one of their cameras in accord with this design, which involved photographing the sound at the sprocket through a slit in contact with the film and with the Arc light placed directly behind the slit.

Feb. 8, 1924: In the same way, a Bell and Howell standard picture printer was redesigned to provide both sound and picture printing apertures and exposure control shutters. This work was done locally.

Feb. 8, 1924: Case wrote, "I think it would be better to do away with the slit entirely in the sound reproducing chamber as a slit is liable to become clogged being so small and the best method of procedure will be to construct a light with a very fine short straight filament and place a lens in front of this so as to suitably produce an image of the filament which may be brought to the size desired, say one and one-half thousandths of an inch and allow this image to pass through the sound record, spread, and then over the Thalfide cell."

Spring, 1924: De Forest had about twenty outfits giving read shows in theaters.

Feb. 28, 1924: A letter received from de Forest explained lack of Case publicity and stated that Phonofilm was a combined invention of de Forest and Case.

March 25, 1924: The Bell and Howell camera modified for sound was received

at Anson and was tested. The motion was unsatisfactory.

May 8, 1924: Case suggested that the slit be protected by placing a glass wedge in the slit opening. Previous slits were susceptible to dirt and dust and were cleaned by opening and closing, or by an air jet.

July 9, 1924: E. B. Craft, of the Western Electric Company, advised Case and Spanable that Western Electric would probably be willing to grant a license for the Laboratory to use amplifiers commercially.

July 26, 1924: De Forest began using the Case design of camera in which the sound was photographed on the film at the sprocket position. (This same method of recording is still in use in several cameras today.)

July 28, 1924: De Forest asked Case to make recordings of Coolidge and La Follette in Washington. De Forest was to supply a professional cameraman. (These pictures, photographed on August 11, were the first news sound pictures of importance ever made.)

Aug. 1924: A small sound recording studio was constructed in the basement of the Case Laboratory. This consisted of a room about 10 ft. sq. with a 6-ft. ceiling. The walls were made of hair felt. The camera was placed outside of the studio and its lens inched the interior through a hole in one of the studio walls.

Incandescent lighting was used to the extent of twelve 100-w. lamps. The sub-

ject could not exist in the studio for more than a few minutes at a time without coming out for air.

Dec. 8, 1924: To indicate the general character of work at the de Forest studio the following is taken from notes of Dec. 8, 1924:

"A visit was made to the de Forest studio. Reproduction was heard on the de Forest system using the slit arrangement. It was found that their slit was set at about four mils. When this was brought down to one and one-half mils the reproduction was very good, although the quality was not quite as good as with the focused filament arrangement. A focused filament set-up was made for de Forest using some lamps made in his factory. In these lamps the filament was held straight by spring tension, being the same arrangement as used in his amplifier tubes. The filament diameter of the lamps used was about one-half mil. The reproduction on this focused filament arrangement seemed to be very good. The Vitaphone lens was used and improvement will probably be noticed when de Forest obtains the special Baugh & Lomb 1:1 objective which we had developed.

"Aside from a noticeable improvement in his reproducing apparatus the attention at the de Forest studio had not changed appreciably. He had made a number of Phonofilm Ors, a Christmas number, included a song by Miss Rap-

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When members frequently gather at the A.S.C. clubhouse, groups such as the above get together to discuss and analyze current problems of motion picture photography. Jackson Rice, A.S.C. (standing) described a camera setup to (left to right) Lester White, A.S.C.; Harold Lipshitz, A.S.C.; Joseph Bollenberg, A.S.C.; and Lee Gurnea, A.S.C.

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14. Screen Makeup

By CHARLES LORING

MOTION pictures, unlike still photographs, cannot be re-touched. Once the features of a player are recorded on a strip of film, they cannot be changed—unless the producer is willing to go to the trouble and expense of retaking the scene. This is one of the most important reasons why make-up plays such an important role in the production of motion pictures.

The prime function of screen make-up is to fit the face of the actor to the part. Where the character is an average type this is not difficult, but where a role is unusual, the task of make-up is something of a challenge. For this reason, it behooves the producer to have on part of his crew someone especially skilled in screen make-up.

Make-up artists who have worked only on stage productions will find that their techniques will have to be especially adapted to fit the requirements of the screen. The motion picture camera, especially in close-ups, greatly magnifies the features so that every pore and evenhairs is clearly shown. This means that screen make-up must be vastly more precise than stage make-up. There can be no carelessness in application, no skimming over of details. Thus, too, whereas stage make-up is purposely exaggerated so that it will look right to spectators sitting in the last row of the gallery, make-up for the screen must be much more subtle if it is to avoid that artificial quality which is all too easily recorded by the eye of the camera.

The Functions of Make-up

Besides fitting the face of the actor to the role, screen make-up performs a variety of other functions which help give a professional and realistic finish to the production.

Firstly, few faces are perfect. Usually there are small blemishes, scars or freckles which will be greatly magnified by the camera lens. These can be eliminated or greatly minimized by the use of proper make-up.

Secondly, make-up can alter features which are not suited to the role. A pug nose can be made to look negative, a young face can be made to seem old, the contours of cheek and chin can be altered to fit the character.

Thirdly, the subtle tones and textures of the complexion are often lost in photography. Proper make-up prevents these tones from "washing out," helps preserve

natural modeling and texture, and does much to smooth out a rough complexion.

In addition, once the basic make-up has been established, there need be no fear that during production skin tones will change due to sunbath, tanning, etc. Make-up means a consistent quality throughout.

Lastly, since the making of a motion picture is plain hard work, the strain of long hours and irregular schedules may show up in the faces of the players and be noticeable in the close-ups. Proper make-up hides these signs of fatigue and enables the players to appear fresh during the entire picture.

Types of Screen Make-up

With the development of positive movie film emulsions which are sensitive to all colors of light, it was inevitable that new types of make-up would be developed to fully complement the new emulsions. Thus, panchromatic make-up was introduced and became a standard feature of modern cinematography.

Basically, panchromatic make-up for black and white photography consists of a wide range of neutral tones, of tan and warm brown. To the eye, this make-up, when correctly applied, gives the effect of a monotone complexion—but to the camera lens, these cosmetics present a smoothly realistic effect when used in combination with modern film stocks.

Color cinematography requires cosmetics which are especially balanced to give best results with Kodachrome and Ansicolor. Here, nature's colors are duplicated and carefully applied to give us realistic as effect as possible.

Leading cosmetic manufacturers have separate lines of preparations especially developed for screen make-up. These manufacturers also supply carefully worked out charts which note in detail the correct shades and combinations of cosmetics to be used for each physical type and a wide range of character make-ups. The Max Factor organization in Hollywood has an especially fine research and service department devoted to problems of screen make-up.

Applying Screen Make-up

The following basic procedures are standard in the application of make-up for the screen, and should be executed in the order noted below:

Preparing the Face—Before any make-up base is applied, the skin should be

thoroughly cleaned with soap and water. Men should be cleanly shaven. It is not necessary to use cold cream before applying foundation.

Applying Foundation—A small amount of grease paint or cake foundation should be applied to the face with the fingertips. It should be patted on, so that the face will be completely covered with small dots of foundation. Avoid using too much.

Blending the Foundation—Fingertips moistened with water should be used to spread the make-up smoothly over the skin. Moving the fingertips from the center of the face outward, blend the foundation so that a thin even layer covers the skin. The fingers should be dipped in water from time to time to aid in blending the foundation.

Applying Eye Shadow—The eyelids should be shaded by means of a thin film of lining color applied with the fingertips. Use a light motion, blending the color upward toward the eyebrows and outward toward the lids.

Applying Eyebrow Pencil—With a sharpened eyebrow pencil, carefully line the edges of the lower lid, extending the lines just a bit beyond the eye itself. With the fingertips, smooth out the sharp contour of the line.

Applying Lip Rouge—With a fine brush, outline the lips in a shape best suited to the character. Fill in with rouge, being careful to apply a fine inside of the lips, as well, so that no lip make-up line will be seen when the actor is speaking.

Applying Face Powder—With a light motion, pat the powder evenly over the grease paint, lip rouge and eye make-up, brushing off surplus powder with a special powder brush. Moisten the lips to reduce the color of the rouge.

Make-up for Eyebrows—With an eyebrow pencil carefully accentuate the shape desired, taking short strokes that simulate hairs. The eyebrows can also be darkened by brushing them with moist cake make-up.

Body Make-up—Women wearing low-cut gowns should cover the exposed areas with body make-up of a shade complementary to the face make-up. Liquid make-up should be applied starting at the neck where the face make-up stops. Brush the make-up onto the neck, shoulders, arms and hands with a consistent downward stroking motion. The make-up should dry evenly, and can later be removed with soap and water.

Principles of Character Make-up

When we speak of a character role, we mean one which departs from straight ordinary types, an unusual or curious personality. Roles in which younger actors are asked to portray older people also come under the character heading. Such roles require specially designed and carefully applied make-up.

When the make-up artist is asked to design a certain character make-up, he should use the actual personality himself as a model, if possible. He should care-

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AMONG THE MOVIE CLUBS

Milwaukee Amateur

Annual movie contest run-off of entries was held at the June 15th meeting of Amateur Movie Society of Milwaukee, held at the Red Arrow Club. At the June 15th meeting, which wound up meetings of the club until September, members of Kenosha Movie Club were guests to view a program consisting of "The Alpine Vroom," by Arthur O Jensen of Seattle, "All-American Soap Box Derby" and "Beautiful Milwaukee," by Carl Hirth.

Fifth annual joint picnic of the Tri-City Clubs was held on July 27th at the Western Museum grounds at Racine, with the Racine Club as hosts this year.

San Francisco Cinema

Cinema Club of San Francisco is one of the many clubs that continue meetings through the summer months. At the July 15th meeting, held at the Women's City Club, film program arranged by Ben Nichols, comprised "Scene California," by Ed Serpente; "Strut—Man's Boycott," 1,000 feet of 16 mm. technicolor in sound loaned by Columbia Steel Corporation; and "Iwa Jima," made available through Public Information Office of the U. S. Navy.

Victoria Amateur Cine

Special 8 mm. contest open to all amateurs in Australia and New Zealand was held by Victorian Amateur Cine Society of Melbourne, Australia, with entries to be screened on August 7th.

At the June 4th meeting, Tex Glanville staged a program of 8 mm. technicolor and color films, with the June 18th film program of members' films included "Devils and Daughters," "Emergency Agent," "Hired and Fired," "Tennants," and "Scenes Around Victoria," latter two by C. Greenhill.

Seattle Amateur

"The Family Alliance," a demonstration film in color on new interior lighting technique for movie makers just released by General Electric Company, featured the July 8th meeting of Seattle Amateur Movie Club, held at Epiphany Hall. Also on the agenda was tips on travel movies, and films by Erwin Miller, Jack Martin and Jack Moran.

Members are now preparing and shooting films for the Vacation Contest, which closes December 8th.

Utah Cine Arts

First of two summer picnic outings of Utah Cine Arts Club of Salt Lake City was held at the Amphitheatre, Box Elder Plate, on evening of July 15th, with large turnout of members and friends bringing along picnic baskets for repeat picnic to showing of a splendid film program. Latter included: "Lights and Shadows of the Grand Canyon," in 8 mm. Kodachrome by Lynn Clayton, "Chills and Spills," and "Holiday on Ice," by Jess Hansen; "Remnants of a Sarswell," by Virginia Smith, "Trees and Homes," and "Woody Woodpecker" cartoon.

Alhambra La Casa

July 24th meeting of La Casa Movie Club of Alhambra, California, provided film program including, "Desert Color and Grand Canyon Scenes," by Mrs. Clyde Colson; "California Flowers," by Paul C. Knapp; "Vacation Time," by D. M. Gardner; "Views Around the Islands off the Coast of Baja, California," by Mrs. James E. Lewis; and "Review of the Anniversary Dinner," by A. J. Zeman.

August 18th meeting will be a picnic at the Fairview County Park at Alhambra.

Los Angeles Cinema

Mid-year contest prize winners of Los Angeles Cinema Club were shown at open dinner meeting held at Los Angeles Breakfast Club pavilion on evening of July 1th, and capacity turnout resulted.

Directors of Photography George Foley, A.S.C., and Al Gilles, A.S.C., teamed up with member Gae Pauline as judges for contest chairman James Mitchell.

Charles M. Peters tabbed first prize for his highly original "How To Become An Amateur Cinematographer," a humor-packed film showing the lack of sales resistance of a camera enthusiast—in addition to many excellent scenic shots.

Robert Du Sae was second prize for his adventurous and amusing "Expedition to Mystery Lake." E. A. Russell received third prize for "California Scenes and Flowers," while Edward Alton scored fourth spot for his "Fifteen Thousand Miles in Thirty Minutes," a high-speed tour of out-of-the-way spots in Central and South America.

Three short films, entirely without cutting or splicing, concluded the evening's program—as winner's in a special contest. They were, L. V. Tow's "General MacArthur's Park," (first prize); Mrs. E. B. Kellman's "Parks," (second); and Charles A. Peters' "The River," (third prize).

San Francisco Westwood

Films entered in the no-member contest of Westwood Movie Club of San Francisco were exhibited at the June 27th meeting, held in St. Francis Community Hall. In addition, Bill Strangall provided a demonstration of the Sound Mirror.

Club bulletin announces that the annual picnic will be held at Flood Park as a joint enterprise with the San Jose Movie Club.

New York Eight

"The Penitent Corpse," a psychological drama by Karl Koerber and Victor Aronson, opened the film program of the June 18th meeting of the New York Eight MM Club, held at Hotel Pennsylvania, and scored a huge success. Bill Wood presented his stunning review of a movie, "Lee Shook Sylvia," while a guest, Miss Ryan, screened her reel of Kodachrome scenic material of the northwest.

Syracuse Cinematographers

Two films from the library of American Society of Cinematographers—"Nation Builders" and "Ritual of the Dead," featured the July 28th meeting of Cinematographers Club of Syracuse. "New York State—Vacation Empire," was also on the film program for the evening.



Irvin F. Beecher of Philadelphia Cinema Club set to shoot a clapper of a flower in Maria Anderson. Clapper photo by post president A. L. O. Smith.

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Kod

Cinema Workshop

(Continued from Page 284)

fully observe types who inhabit the scene, the waterfront, the foreign sections of town, etc.—all of the time making mental or actual notes on the facial characteristics that make these types distinct.

Character make-up is based on the correct placing of highlights and shadows. Highlights are used to accentuate features such as the nose, chin, cheeks and

wrinkles. Whenever a dark line is drawn on the face, it must be highlighted with a line of lighter cosmetic and the two should blend smoothly into the foundation. For normal highlighting need a shade of kring color three or four shades lighter than the base make-up. For exaggerated effects, use white liner.

Shades are used to play down features or to make certain areas of the face seem sunken. They are simulated by means of coloring which is darker than the base make-up. To make the cheeks or temples seem hollow, use shades of gray or browns, highlighted with a much lighter color. Blend the edges of these tones smoothly with the foundation to avoid obvious lines.

The Eyes—Eyes are perhaps the most important single feature in expressing emotion, especially on the screen. For this reason they require careful and correct make-up. They may be made to look sunken by applying dark shades of color to the sockets. They may be made to look larger by drawing a line with the lining pencil around the upper and lower lids. Keep this line a short distance back from the lash lines, and extend to the outer corners of the eyes.

The Nose—To make the nose seem thinner, apply a highlight (much lighter than the base make-up) to the bridge of the nose, shading the sides with darker brown or gray tones. To broaden the nose for character effect, reverse the pattern. To make the nose seem to tilt upward, apply a triangular area of dark shadow to the space between the nostrils.

The Mouth—If one lip is to seem more prominent than the other, use a wider contour and a lighter shade of lip rouge. The reverse of this can be used to play down a lip that is too prominent. To produce a happy, good-natured expression, tilt the edges of the mouth slightly upward. To produce a mean, tired, or pained expression, tilt the edges of the mouth downward.

The Chin—To minimize a protruding chin, apply a dark shade of coloring to the center, blending the edges smoothly into the foundation. To bring out a receding chin, apply a much lighter shade to the center.

Wrinkles—First, find the natural wrinkle lines by asking the subject to distort his face, forcing wrinkles to appear. Mark these wrinkles with lining color, later accentuating them to the degree desired. The wrinkle lines should be highlighted with a much lighter color, and the whole pattern should be smoothly blended into the foundation.

Old Age Make-up—Old age is usually characterized by sunken or puffy eyes. The effect may be gained by using a dark eye shadow which extends down to the circles below the eyes. Then, immediately beneath the lower lid, carefully blend very light color to form a highlight, so that a puffy effect is noticed. Mouths of older people have a very sunken lip-line. Use a darker tone of lip rouge blended with gray coloring. Draw

vertical lines toward the mouth to give it a shrunken appearance.

Nose Putty is used to change the contour of the nose, cheeks, and chin. The putty is shaped into the form desired and then carefully worked so that the edges blend in with the skin. A coat of grease paint over the whole affair will make the effect seem realistic.

Scars are of two general types, *raised* and *indented*. The raised type, or welt, is effectively created by means of nose putty applied directly to the skin and accentuated by highlights. The indented type is made by applying colloidal, which draws in the skin causing a depression in the surface. Several applications may be necessary to get the desired effect.

A Word on Color Make-up

As we have said before, the success of make-up for color motion pictures depends upon simulating realism. Do not overdo make-up for color. Be sure the colors used are the right colors for the physical type of your character, and check to see that rouge, powder, foundation and lip rouge harmonize.

Remember that blondes require a different color scheme than brunettes, and that even the color of the eyes must be taken into consideration. There is also a difference in the complexion tones of old people. They are faded and less vivid than those of younger characters. A person suffering ill health is pale, whereas a rugged outdoor type has a ruddy or tanned glow to the skin.

To avoid unnecessary make-up problems, never leave the planning of the make-up till the last moment. Study the play and find out what types are required. Then, keep this in mind when the play is cast. Make-up can do only so much, so in casting try to select types who, even without make-up, most nearly fit the physical requirements of the character. Then, use make-up skillfully to accentuate the head start nature has provided.

NEXT ISSUE: Part 15—The Pre-dressing Stage.

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Sidney Wagner, A.S.C.

The motion picture industry lost one of its most qualified and popular Directors of Photography with the sudden passing of Sidney Wagner, A.S.C., from a heart attack on July 26. After spending the week-end at his Belboon Beach home, he was driving with his wife to the Metro-Goldwyn-Mayer studios to resume photographic direction of "Waterfront" when strokes hit. He slipped out of the car to allow Mrs. Wagner to take the wheel, and died before she reached his office.

Wagner, a member of the A.S.C. since 1922, started his motion picture career as an assistant cameraman at Fox in 1912 following graduation from Hollywood High School. After a 10-year apprenticeship as an assistant and second cameraman, he was promoted to the post of Director of Photography, and—on handling several comedies and western feature-tons—soon became recognized as an author specialist in motion picture photography. In 1928 he left Fox to join the camera forces of Metro-Goldwyn-Mayer, handling photographic direction at the latter studio on "Boy's Town" as his first assignment. This was followed by numerous other important assignments, including "A Christmas Carol," "Young Tom Edison," "Northwest Passage," "Sporting Blood," "Dragon Seed" and "Sister Takes a Wife." Recently, he was Director of Photography on the Technicolor production of "Rome"—mostly filmed in Mexico, "High Noon," much of which was made at Comstock, and "The Romance of Rosy Ridge," mainly photographed in northern California.

"Waterfront," on which he was working at the time of his death, was the third western Van Johnson starring production Wagner photographed. The high esteem in which he was held by the stars and players at the studio is demonstrated by the actors of both Johnson and Jane Allen in going home the day of Wagner's death, and their attendance at the funeral services on July 10th at Little Church of the Flowers, Forest Lawn.

Paying tribute to Wagner at the services were numerous associates from Metro-Goldwyn-Mayer, including E. J. Mann, Ben Hurst, J. J. Cash, producer Bill Wright, director Norman Taurog, W. J. Crisp, Ted Butler, and W. W. Spencer, a large number of A.S.C. members, and many others from the industry at large. He is survived by his wife, Maria, and son Sidney, Jr.

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Have You Tried Filming A Sports Newsreel?

By James R. Oswald

(5)

HOME movie enthusiasts who lean toward the impromptu or spur-of-the-moment type of filming, rather than shooting from a prearranged and fully rehearsed script, often find their efforts sorely lacking in anything that even faintly resembles the good continuity so essential to a really worthwhile screen presentation. Such rise fans will find everyday sports a "natural" for this unvarnished kind of movie making, with plenty of action and the desired continuity being provided without the necessity of spending long, arduous hours of brain-racking prior to the actual shooting. And it makes little difference whether the particular sport that most captures the fancy happens to be baseball, tennis, or golf—swimming, hiking, riding . . . or any other of the thousand-and-one forms of recreation that help provide a means of escape from the boredom and monotony of everyday life. For in this sports-conscious world, one need not fear the completed film lacking in high entertainment value for all concerned, if only a little discretion is used in the making and the cameraman returns on his toes to record all strategic bits of action.

Best of all, with impromptu filming, persons who are normally inclined to "freeze up" every time they are called upon the face a camera lens, lose all sense of self-consciousness and "stage" fright when permitted to do their acting while deeply engrossed in some favorite sport that is very much to their liking.

Take the case of Miss Lee Boot, for example, whose carverous figure dominates the photographs illustrating this article. As dainty as a dance shoe as she is a challenge to her opponent in a sporting match, the one thought farthest from Miss Boot's mind is that of becoming a movie actress, since posing for pictures always proves a tremendous ordeal for this exasperating, camera-conscious cutie. Yet, given a baseball bat, a tennis racket, or a swim suit with which to occupy herself, and out and young sports fans will rival any actress in Hollywood. For Lee exemplifies, as the French would say, the *jeu de scène* that is typical of the modern American girl.

But just how to go about building up good continuity is an unlearned, spur-of-the-moment sport itself. That the cameraman should remain on the alert to



Peace and other hot sports require expert shooting. Posing, and although beautiful subjects, as above, are always descriptive.

cover all important bits of action having a direct bearing on the final outcome of the competition being filmed is, of course, understood. This "suspense" element is essential to holding audience interest in all well-rounded screen plays, as a tip to your local theater will reveal. But even an action-packed reel of sports can become mighty boring if a little variety isn't offered in the form of interesting sidelights, which are as much a part of the chronological order of occurrences at a sporting event as the main action, itself.

An analysis of the professional newsreel cameraman's technique is avoiding redundancy might well prove of value to the amateur. No matter how important the affair covered, it will be noted, the camera is focused not alone on the principal attraction, but equally on "off-the-record" shots of those participating, as well as on capturing the enthusiasm of the excited spectators witnessing the game on. And this applies not only to one particular newsreel, but to all of them, without exception.

Why not incorporate these tactics of the professional in your own sport reel? Whether those taking part number one or one hundred, inject at frequent intervals interesting sidelight scenes of the onlookers along with those of the players to give the film that added "punch" often spelling the difference between success and failure. A study of the accompanying pictures may offer suggestions. So if you are like the average cine fan who finds himself short on ideas when it comes to unlearned movie making, try filming a sport newsreel!



White sails and gleaming hulls of sailboats provide unlimited opportunity for your personal subjects. Above is group of Wilby class yachts playing for shot of a net.

25 YEARS AGO With A.S.C. and Members

With this issue, American Cinematographer goes back in the files of a quarter-century ago to recall the activities of the American Society of Cinematographers and its members in 1932.

• Gus Petersen, A.S.C., chief cinematographer for Ben St. Hampton Productions, was promoted to a directing post with that company. Other A.S.C. members directing features in 1932 were: president Fred Jackson, Phil Rosen, Edward Kull, Fred Granville, George Hill and John Leiser.

• Annual prosperity ball of the A.S.C. was held at the Ambassador Hotel; with Max Fisher's orchestra providing music for dancing. Entertainment included several ballet numbers staged by Theodore Kosloff; but main attraction was a demonstration of the Cinemascope—transmission of pictures by wireless, together with accompanying music—by Dr. Elmore R. Walters.

• An early advertisement of Mitchell Camera Company stated that "orders will be accepted direct until agencies are established."

• Herford Times Cowling, A.S.C., reported on his camera tour of Mexico, where he photographed subjects for the Burton Holmes series of travelogues for Paramount release.

• Walter S. Larkin, A.S.C., was elected president of the Hal E. Rensch Laboratories.

• An article from the bulletin of National Board of Review, noted marked improvement in the dramatic credibility of serials, and predicted that the chapter plays would again be on progress of the larger theaters.

• A motion picture laboratory had been established in Jerusalem, and many traveling cameramen in the Near-East area were making use of the facilities, according to an article. Accompanying illustrations of the lab showed two tanks, a hand pump, and three workers in a room about twenty feet square.

• Jackson Rose, A.S.C., was featured in an illustration showing him hand-cranking the number one Bell & Howell 35 mm. professional camera at the Essanay studios way back in 1910.

Bulatour President Honored by A.S.C.

William German, president of J. E. Bulatour, Inc., distributors of Eastman motion picture film, was the honored guest of the A.S.C. at a membership dinner held at the clubhouse on evening of July 16th. With 100 in attendance, President Leon Sharkey was main speaker of the evening, with Past-president Len Smith delivering a brief address of welcome to German who was on his annual trip to Hollywood.

President Sharkey was the surprised recipient of a birthday cake presented for his birthday of a few days previous.

New WE Sound Recorder Delivered

Initial eastern U. S. delivery of a Western Electric 335-D recording system by the Electrical Research Products division has been made to Eastern Sound Studios, New York. Latter specializes in dubbing of foreign language versions of American features, with major portion of translations being made in Spanish for the Latin-American market, while large amount of work is devoted to versions in Turkish, French, Arabic and Portuguese.

DuPont Opens Boston Office

Photo Products department of DuPont has established a new district sales office for the New England district in Boston. Frederick B. Antley functions as district manager.

Cleveland RCA Sales Exec.

R. L. Cleveland has been appointed district representative covering nine western states for RCA 35 mm. motion picture equipment. He will headquarter in Los Angeles. Prior to joining RCA, he was affiliated with Audio-Video Institute of Dallas.

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Historical Development Of Sound Film

(Continued from Page 283)

held in a Christmas tree setting followed by a church scene with choir boys singing and ending with a trumpet chorus in supposedly a heavenly setting. All of this number was slightly out of focus and it is doubtful whether or not it could be used commercially.

Jan. 12, 1925: Case devised a slit with cover-glass protection. This was a very important step in making sound recording practical. This slit consisted of a small piece of quartz about 0.25-in. square and 0.04-in. thick. One side was coated with chemically deposited silver and a slit about 0.001 in. by 0.125 in. was ruled in this silver coating. A thin cover glass was then cemented on top of the silver and the cover glass was ground and polished down to a thickness of less than 0.001 in., including the cement. The slit was then mounted in a steel shoe that could be placed in contact with the film at the camera sprocket. The Aero light was set close to the quartz slit, thus eliminating the use of a lens to focus the glow discharge on the film and ensuring the maximum amount of light reaching the film.

May 18, 1925: Dr. Forest borrowed the Bell and Howell camera from Case in order to make sound pictures of Dr. Elliott in Boston.

Sept. 1925: Business negotiations between the working arrangement between de Forest and Case, Case, having gone this far in the talking picture field, decided to continue the work and finish up some of the technical problems that were still not solved.

During the fall of 1925, the Case Laboratory started building their first sound reproducing attachment. After considerable deliberation it was decided to design this to operate below the projection head rather than above, as had been de Forest's previous practice. This was decided upon for three reasons: First, it was decided to incorporate a large fly-wheel that would give sufficient inertia to iron out all inequalities that might be transmitted from the projection head. Second, in the Bell and Howell camera the sound came after the picture and a better printer design was possible if the sound was not transposed to a position ahead of the picture. And, last, which seemed important at that time, an attachment was wanted that would not run sound films previously made, which in some instances were quite bad. Sponable laid out this design and supervised local mechanics in constructing it. It was here that the industry received its 145-in. hangerover—the sound and corresponding picture were displaced by 145-in. or 28 frames. This early attachment was very similar in principle and design to the present ERPI type 268.

Sept. 14, 1925: It became apparent that great mechanical accuracy was required in making the recording camera; this is emphasized by the following quo-

tations from the Case Laboratory records:

"The camera was received back from Bell & Howell Company on September 12. Tests were begun on this camera September 14. The first test taken was made of voice and piano. When this was reproduced it was found that the camera still had a bad sprocket pulse. The eccentricity of the sprocket was determined with an indicator. It was found that it was running off about 5 of a mil on one end and 7 of a mil on the other. This, together with a noticeable high spot in the gears, was sufficient to account for the pulse observed."

"We tried the shaft alone in its bearing and found that it was running fairly true. The sprocket, when tried alone on an other running true, was found to be 2 1/2 mils off and also slightly out of round. We made inquiry as to the best mechanics around here and after trying a number of shops found that Doyle & Wall, 222 Pearl Street, Springfield, seemed to be the best to do further work on the camera. They are used to working with a tolerance of 1 mil and seemed to fully appreciate our problem."

Nov. 23, 1925: "After returning to Auburn, Case went over the patents as sound recording and after calling Mr. Thompson into conference it was decided that the field was much more open than we had previously supposed. Dr. Forest gas discharge patent seemed to be limited to the use of alternating current. Also it seemed questionable whether a court would uphold such patents as the Eos and the Pratta. Mr. Thompson was sent to New York to get the opinion of Mr. Gifford, supposedly one of the best attorneys in the matter of patents. Mr. Gifford's opinion in this matter seemed to confirm Thompson's, that is, that the field was open and that as we seemed to have any fundamental patents on the system of talking moving pictures."

Dec. 8-10, 1925: "About a year ago we approached the Western Electric Company regarding the use of their amplifiers or commercial showing of the talking pictures. At that time Mr. Craft advised us to go ahead and use them for the purpose and stated within a few weeks the Western Electric Company would submit a contract to us covering some form of a license agreement. Nothing further happened regarding this agreement at that time. Now that we are interested in using these amplifiers for possibly road show work and having several connections with the de Forest outfit E. I. Sponable went to New York for the purpose of seeing Mr. Craft and if possible, obtain his O.K. to go ahead with their amplifiers for any commercial work we should want to do."

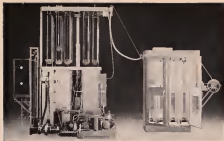
"On seeing Mr. Craft we explained to him the situation and recalled to his mind our conversation of last year. He stated that since that time considerable work had gone over the desk and that they were now interested in talking moving pictures themselves. Further, that they were negotiating or had completed nego-

tiations with Warner Bros. to furnish the latter company with apparatus and technical aid to enable this moving picture firm to produce and market talking moving pictures. Considerable discussion of the subject resulted in Mr. Craft's saying that he believed we were further along in the art than they were and that he saw no reason why both the Case Research Laboratory and the Western Electric Company should not get together and compare their accomplishments and possibly enter into some agreement with a moving picture company whereby both the Western Electric Company and the Case Research Laboratory would benefit. He further stated that he would like to send two of his technical men up to Auburn to hear our films and look over our developments. After they had returned and reported to him he would then try to arrange a meeting between representatives of the laboratory and the commercial men of the Western Electric Company."

"Before the call on Mr. Craft the Keith-Albee people were visited for the purpose of determining whether or not they would be interested in obtaining our talking moving pictures for an act of vaudeville. Mr. Oakford of the booking department of the Keith people was given information regarding our system. He was very much interested in what we told him and stated that he would take it up with men higher up in the company and advise as regarding their interests. He reported the following day that he had talked with the vice president of the Keith company and that the latter was very much disturbed to think that he would have to bring up the subject of talking moving pictures to them again. They admitted that they had been stung on the thing twice, once about fifteen years ago where they invested considerable money in stock of a talking picture outfit, and later in certain connections with the de Forest company. The vice president of the Keith company stated positively that they were not interested in talking moving pictures."

Dec. 15, 1925: "In our conference with Mr. Craft last week, he intimated that the use of amplifiers in talking moving pictures would cease under their public address work and that at least for two or three years we would be unable to use amplifiers for this purpose without the permission of the Western Electric Company."

"In order to check up this point it was thought best to talk it over with Dr. W. R. Whitney of the General Electric Company. This was done by E. I. Sponable on December 15. Dr. Whitney stated that the situation was really something that Mr. A. G. Davis (vice president of the General Electric Company) was more fitted to give an opinion on than he. After describing the situation to Mr. Davis he stated that he believed that the talking moving picture did not come under the public address work and that at present the amplifier situation was quite modified, there being almost an endless



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number of patents in this connection. Sometimes within the next year they hope to clear this situation by placing all these patents in the hands of the Radio Corporation. Mr. Davis stated that he believed we should see Mr. Davis Barroff, president of the Radio Corporation, and get his opinion regarding our requirements. He very kindly suggested that he would arrange such a meeting for us and is doing so at the present time."

"Dr. Whitney as usual was very nice in

this connection and took the attitude that he was particularly anxious to see anyone who was doing good research like the work carried on at the Case Research Laboratory."

Dec. 17, 1935: "Dr. Conradell and Dr. MacKenzie of the Bell Telephone Laboratories were sent here by Mr. Craft. They were shown our talking films and all parts of the taking and reproducing system were explained to them in detail."

"We gathered from them that our

films were very good. They stated that they believed that in their own recording that their ground noise might be slightly less but discounting the fact that we were not using as good loud speakers or telephone equipment as they have they thought our stuff to be remarkably good. They noted the simplicity of design of the camera and projector and commented on the fact that such a design could be readily commercialized.

"We gave them data concerning our photoelectric cells and recording lights. They stated that they would like to order those various devices so that they could determine their constants using their own apparatus at the Bell Laboratories."

Jan. 4, 1936: An opinion was received from Mr. Adams, head of the patent department of RCA.

"He stated that due to Dr. Forest's original patent having expired that de Forest now had no more right to use amplifiers or to make vacuum tubes than anyone else and that the field now seemed to be completely controlled by the Radio Corporation as the result of patents held by the General Electric Company and relating to the manufacture of vacuum tubes and their use in various circuits."

"With reference to where has the right to supply amplifiers for use with talking moving pictures he stated that this right rested with the Radio Corporation or at least would rest with them when certain patents now under negotiation are finally turned over to them. Further, that he believed from the agreement with the Bell Telephone Company that the Radio Corporation reserved the right to use amplifiers in the connection with talking moving pictures for themselves."

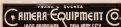
Jan. 7, 1936: A meeting was arranged with Adams and his associate, Capt. Ranger.

"The only new thing which developed was at this meeting Adams reversed a statement which he had made at a previous conference with E. L. Spornable, that is, that both the Radio Corporation and Western Electric Company would have rights to use amplifiers for talking moving picture work. He stated that he would talk the matter over with Mr. Barroff and advise us shortly regarding some arrangement for starting a company to handle the talking picture situation."

"Previous to this meeting of Adams and Ranger, Mr. Case and Mr. Spornable were at the Bell Telephone Laboratories to see Mr. Craft. We told Mr. Craft that we had checked up the amplifier situation with reference to talking moving pictures and had found that the General Electric Company seemed to believe that they controlled the rights for the use of

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amplifiers in this connection. Craft then stated that it was really something that both companies had a joint right in and that in case the General Electric Company should use amplifiers for this purpose they would possibly have to obtain permission to do so from the Western Electric Company. Mr. Craft further stated that he was anxious to get a report from his men regarding our Aeo lights and photoelectric cells which they wished to examine."

"We went down to Dr. Crandall's office where we saw the Western Electric system of film recording. Inasmuch as our visit was rather unexpected they seemed to have considerable difficulty in getting their apparatus to work properly. The showing which they made during this exhibition was not impressive to us. They were, however, using fairly high quality amplifiers and a laboratory model of a loudspeaker which gave excellent and true quality of reproduction. They showed a number of records taken of the Capitol Theater music including pipe organ, unbrackets and singing. They also showed one talking record made in their own laboratories. The talking record was not good and when reproduced on a cone such as we use, it was extremely bad. Their recording of music reproduced seemingly well although possibly part of this was due to the high quality of the music recorded, that is, the Capitol Theater orchestra. After hearing these records we attended a luncheon with Messrs. Adams and Ranger noted above and then returned again to the Bell Telephone Laboratories. During this time the apparatus had apparently been given an overhauling and the showing or reproduction was much better than that heard during the morning. It is interesting to note here that with the Western Electric reproducing amplifier which they were using they found it necessary to add an equalizer to correct for a discrepancy in their photoelectric cell. Without the equalizer the low frequencies came through in great predominance. Adding the equalizer decreased the volume to about 1/30 and brought the quality to approximately normal. Their photoelectric cell was connected to the first tube using 20 megohm resistances. In our work we use about 50 megohms across the cell and about 50,000 ohms across the first bulb. It is possible that we compensate for the equalization in this manner."

Jan. 29, 1926: Case and Sponsable visited the Warner Theater to see a demonstration of Maxfield's Vitaphone.

"We all agreed that the showing was very good and of commercial quality. However, we believe that our own reproduction was better with regard to illusion and naturalness. In the Western Electric system they were using the large public address system thus accounting for the large range without distortion. Their loudspeaker was apparently of the horn type placed above the screen."

"After luncheon with MacKenzie we returned to the Bell Telephone Laboratories where we met Dr. Crandall and

proceeded to Mr. Craft's office. Mr. Craft advised us that his men had only made a preliminary report to him but it seemed that we had nothing in our system which would be of particular use or addition to the Western Electric system."

"Mr. Craft, however, was reluctant to give up our system entirely and said he would like to know more about it. Inasmuch as the reproduction of the film was the real test, we suggested that the Western Electric Company send us some of their film, both voice and music. We could then reproduce it at Auburn and at least satisfy ourselves regarding the merits of the two systems. They did not like to submit some of their film already taken and stated that they would take two numbers and send them to us the following week."

"We then left the Western Electric Company and proceeded to Captain Ranger's office in the Radio Corporation building. We advised Captain Ranger that we were now ready to go ahead with the talking pictures with them or arrange for licensing the use of their amplifier system. We asked him to bring these things to Mr. Adams' attention and arrange for a get-together to talk the situation over. After leaving Captain Ranger we stopped at the office of Mr. Gifford where we talked over the patent situation. He had already prepared an opinion regarding the de Forest and East patents, this opinion being that these patents were of questionable value. Our talk with him seemed to further his conviction regarding their questionable value and he stated that he would send us the written opinion in the near future."

Feb. 11, 1926: Case devised a way to avoid film-splashes by using graded opaque at the job.

Feb. 1 to Mar. 1, 1926: Case and Sponsable discussed with Whitney and Stone (a vice president of General Electric Company) the possibility of combining the Case system with the work of these inventors. C. A. Howe, General Electric engineers, Robinson and Murray, came to Auburn and went over the Case system. They were very pleased with it. Stone, however, would not admit the Case system added materially to that of General Electric and no agreement was reached.

Mar. 19, 1926: John Joy, who knew Sponsable at Cornell, paid a friendly visit to the Case laboratory. Technically, he represented Courtland Smith who had just joined the Fox Film Corporation. Joy reported concerning the Case talking picture system to Smith and the latter requested Case to bring his equipment to New York to demonstrate to the Fox people.

Apr. 8, 1926: Max Mayer (a dealer in theatrical equipment) came to Auburn to witness the Case talking pictures. He pronounced the demonstration to be perfect, but advised Case that a feature picture would be necessary to sell the system to a producer. Case considered making this

May, 1926: Case requested the Zoetrope Company to take over and handle the Case system of talking pictures.

Responding to Courtland Smith's suggestion, reproducing apparatus was taken to New York and successful demonstrations given before representatives of the Fox company at Parlor B on 1003 Avenue, at the Nemo Theater, and at William Fox's home in Woodmere. Mr. Fox was at first suspicious of the process; however, a close-up of a canary bird singing while perched on the top of its cage seemed to convince him that the sound was not a matter of trickery.

June 5-24, 1926: The reproducing equipment was installed in the Fox Film building, 850 Tenth Avenue. Recording equipment was brought from Auburn and about 300,000 feet of test records were made in a temporary hair felt studio room partitioned off on the large stage of the Fox building. The purpose of these tests was to convince Fox of the practicability of making sound pictures under studio conditions. The results were entirely successful.

July 21, 1926: An agreement was reached between Case and Fox resulting in the formation of the Fox-Case Corporation. In general, Case turned over all patents and rights in his system of talking pictures to the new company (exclusive of amplification, in which he had no rights to give). Case agreed to continue his laboratory for the purpose of making recording lights, photoelectric cells, and for general development purposes.

(To Be Continued)



United World Appoints Ezzes

Erwin H. Ezzes has been appointed manager of the non-theatrical entertainment film division of United World Films, according to announcement of President James M. Flanery Ezzes has been in charge of branch operations since formation of the company.

"Odd Man Out"

(Continued from Page 277)

of Britain's foremost directors of cinematography.

Although "Odd Man Out" has been called a "kitchen picture," it packs an emotional punch which cannot fail to impress a wide range of audiences. Screen students of cinema technique will find it loaded with the refinements that place skillful motion picture photography high among modern art forms.

McMaster Kodak V.P.

Ronald McMaster, associated with Eastman Kodak for the past 34 years, has been elected a vice president and assistant general manager of that company. His appointment permits better distribution of administrative duties in Kodak, relieving Vice President Ivar N. Holman of the responsibilities of assistant general manager. Holman retains his post as assistant general manager of Kodak Park, company's largest manufacturing unit.

For the past 12 years, McMaster has been in England, later becoming factory manager of the Kodak Harrow Works, and a deputy chairman of the board of Kodak, Ltd.

Batley Joins Radiant

Matthew J. Batley has been appointed plant superintendent for Radiant Manufacturing Company, producers of Radiant projection screens. He has had wide experience as a similar executive with manufacturers of precision built products.

L. A. Cinema Stages Equipment Exhibit

Los Angeles Cinema Club will sponsor its first annual Amateur Cinema Exposition and Tournament at the Breakfast Club on August 11th, from 8 to 11 p.m. Manufacturers and distributors of 8, 16, and 35mm equipment have been invited to display and demonstrate products at the show, and no charge will be made for space required.

In addition, Los Angeles Cinema has extended invitations to members of about 50 16 mm., 8 mm., and 35 Slide organizations in Southern California to attend the one night exposition, and have the opportunity of inspecting new types of cameras and equipment, in addition to witness demonstrations of various models.

A film contest will also be held during the evening, with each club eligible to submit one picture. A cup will be awarded to the winning club. Arrangements have also been made for the serving of horsed'oeuvre beef dinner in the parlors of the Breakfast Club for nominal price.

The idea of staging an equipment exhibit developed from recent experiences of Los Angeles Cinema during the past year, when manufacturers and distributors of such apparatus were invited to demonstrate their product at club meetings. Member response was so enthusiastic, that officers decided on the exposition so that "cinema enthusiasts can become better acquainted with each other and with the manufacturers and distributors and their products—as well as to have a lot of fun."

It's an idea for other clubs to follow for an annual event.

Lloyd Knechtel, A.S.C., to Paris

Lloyd Knechtel, A.S.C., left Hollywood the middle of July for Paris, where he will spend the next year under contract to Les Films Productions in charge of optical printing, special effects, matte shots, etc. for production of "Alice in Wonderland." While abroad, Knechtel will also handle negotiations from Hollywood producers in securing process or background footage.

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Television For Theatres Needs Development

Although television for the home is making rapid strides, it needs considerable development before it becomes of practical use for the theater, the Motion Picture Research Council, Inc., reported recently after a long study.

The report is one of the first made by an interested yet unprejudiced organization and offering an analysis of the prospects, progress and present weaknesses of television.

Council chairman Y. Frank Freeman submitted the report of a special investigating committee to the Association of Motion Picture Producers, which administers and finances the Council.

The report is based on findings of John Lovisary and other members of the Council's television committee, representing technical experts from major Hollywood studios, who witnessed demonstrations, inspected equipment and investigated possibilities of introducing television to the nation's theater screens.

The Council's conclusions included: Home television is improving rapidly in quality of reception and program; film production for television use is largely limited to 16-mm. film and quality is "not very satisfactory"; color television is now "reasonably satisfactory" for theater presentation, but only when images are transmitted by coaxial cable; large-screen, black-and-white projected television pictures are still inferior even to poorer general quality; development of practical theater television equipment will take longer than the year or two years predicted by equipment manufacturers.

The report described a successful demonstration of color television on a screen roughly one-fourth the size of a theater screen in which the image pickup from 16-mm. film was transmitted from the television camera to projector by coaxial cable, not through the air.

"Considerable development will be required before this same quality can be obtained when the picture is picked up by a color television camera, transmitted through the air and projected electronically as a normal motion picture screen of average size," the report added.

"Large-screen black-and-white electronically projected pictures are still inferior to the average motion picture and not satisfactory for other than general type material. Furthermore, the line structure of television scanning is very apparent on the screen."

"At present a full-size picture can be obtained from a practical theater operating standpoint by photographing the image on a television tube and rapidly developing the film for immediate projection on regular theater equipment. Equipment for photographing and developing the film within 60 seconds has already been demonstrated for black-and-white pictures."

No such equipment has been demon-

strated for color film, however, the report added. Nor have color television cameras and transmission facilities been developed.

Greatest interest in home television is shown on sports events, the survey showed. Manufacturers are working toward home receiving sets giving a 30 to 34 inch picture with sufficient illumination to be seen easily in a fully-lighted room. Production of receiving sets is limited and prices are high, the report added.

Wolfe Heads Research Council

Wallace V. Wolfe, veteran motion picture engineer, has been named as director of research for the newly-incorporated Motion Picture Research Council, Inc. Lottier is successor to the Research Council of the Academy of Motion Picture Arts and Sciences, and—sponsored by the Association of Motion Picture Producers—has been granted an initial appropriation of \$150,000 to promote a cooperative and permanent industry-wide research program.

In addition to a staff of engineers working under Wolfe, present members of the Research Council—representing technical departments of all major studios—will assist in the research and development program. Design of new equipment will cover items not now available on the market, and the Council will not become a manufacturing organization.

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Arthur Arce, export manager for S.O.S. Cinema Supply Corporation, is currently on an extensive tour of Latin America visiting with various S.O.S. distributors and agencies in Mexico, Central America, Cuba, Haiti, and Puerto Rico.

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AC-8

New Color Tester

(Continued from Page 215)

experience, to obtain the excellent color results we now accept as standard. With all the noted progress, however, it is a sad commentary on our ability, our intelligence, and leadership in motion picture technique that the methods now employed in kodachrome printing are as obsolete as the daguerotype. To press the point let us examine the evidence.

The commercial printing of kodachrome originals is carried on by a large number of laboratories. Each laboratory has its own filter pack which is supposed to be a cut-all, to produce the finest flesh tones, the best greens, and the best over-all color balance. The developing of these duplicates is done by the Macawee Kodak Company, who in turn instructs the laboratories from which exposed prints are received. This arrangement works well up to a certain point; the filter packs are generally well balanced and Kodak discharges their responsibility quite competently. However, fast answer prints from cut originals suffer as of yore from eye timing, and, if the result of this deficiency does not arouse the producer, an added attraction is the utter and complete lack of scene-to-scene color balancing. Unless the original has been photographed with divine guidance and the photographer was indeed a deeply religious man, this point condition is unavoidable with present equipment. In brief, there are no instruments available which will predetermine print density and optimum color balance, and serve, as the Cines so aptly does, as a guide to tracer and cameraman alike.

Some months ago the necessity of obtaining a printer which would be capable of scene-to-scene changes in color correction became so painfully evident that such a machine was designed and built. This is the Reeves Color Printer, and

side-egged experience has amply demonstrated its value, but as in many innovations of such a complicated nature, the final analysis found the onet before the horse. In other words, the printer delivered results but again the operator was faced with eye timing and eye calculation in the selection of correction filters. Truly this placed him in a worse position than he occupied in the twenties for now, in addition to deny he had the far more involved and difficult problem of proper color balance.

The answer to this problem is the Acme Film Laboratories Color Tester which will be a companion piece to the Reeves Color Printer and permit prediction of color balance and density prior to printing. Ampletime for patent has been made by the Acme Film Laboratories, Inc. and construction will begin at once. A brief description follows.

Front view of the device is shown in Figure 1. It will be noted that it follows in appearance the conventional pattern, i.e. the machine is manually operated, and the feed and take up mechanism for both original and positive raw stock are mounted in the conventional position. Here, however, similarly to the Cines or other film testing equipment ends.

The problem posed before design commenced was to supply strips of as many filter combinations as was considered necessary—and at the same time economical. It was also found necessary that each filter combination be in graduated series as to density, be confined in as short a film section as possible, be exposed simultaneously, and that each exposure produce an equal distance from the light source.

It was decided that the entire strip be 55 frames in length and that each separate filter pack exposure should include not more than 11 frames of the entire strip, and that the 11 frames of each

pack be graduated into steps of 2 printer lights each. The completed strip would then consist of 5 filter pack combinations, each of which would consist of 11 graduated steps. Thus an exposed and developed strip would then provide essential information of density and color balance before printing.

Accordingly the exposure window, which is a plastic, was divided into 5 sections with provision for the introduction immediately beneath and in the light path of CC filter packs. To maintain uniformity of exposure value over the complete strip the exposure window and attendant film transport mechanism was made spherical in shape with the top segment permitting free light passage from a centrally positioned lamp. Each of the 5 sections of the exposure window are partitioned into 11 areas, conforming in size to a 16 mm picture frame. The exposure of these individual areas is controlled by a rotating shutter introduced between the light source and the entire exposure window.

There are many uses for such an instrument. For instance, a cameraman on location shooting blind will enhance the opportunity to evaluate his exposure, composition, and the color response of his lighting. Certainly deviations in sensitivity of emulsions could be instantly detected and corrective measures taken day by day variations of processing conditions would be noted and indicated corrections made. It is calculated that the laboratory which has in use the equipment outlined above will be in a position to assist the producer immensely and permit, perhaps, a lengthening of his shooting day by the adjustment of printing color balance made necessary by the color temperature changes normally encountered in a full day's work.

It is hoped, too, that the construction of these precision instruments by the Acme Film Laboratories, Inc. will stimulate research and encourage investigation by others and in general raise the standards of 16 mm color printing to a level deserved by those who daily are investing substantial amounts in 16mm production.

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TELEFILM HOLLYWOOD

George Eastman

(Continued from Page 279)

Eastman contributions to a modern art and science that have contributed immeasurably to the world's progress, education, and enjoyment.

George Eastman was a visionary—of the hard-headed variety. He made his dreams come true. When he was only 36 years old he jotted down the four fundamental business principles on which he proposed to build his organization. These principles were: production in large quantities by means of machinery; low prices to increase the use of photography; world-wide distribution; and extensive advertising as well as selling by demonstration. His hiring, in 1888, of a chemist to aid in the quest for his first transparent film is the earliest known example of employment of a scientist by an American manufacturer to devote all his time to chemical research.

"My desires are limited only by my imagination," Eastman said in those first, fateful years of his enterprise, when the simplification of photography for the amateur was his goal. That his aim was to be the first in photographic progress from the wet-plate era to the present he could hardly have foreseen.

Among outstanding Eastman contributions to photography since 1888 have been the following:

Panchromatic film. Sensitive to all colors of the visible spectrum, this film marked a new era in motion-picture photography.

The system of narrow-film motion pictures, based on converting the negative from the camera into a positive for projection . . . involving whole new classes of apparatus . . . and now expanded beyond its original function of "home movies."

The Kodachrome system of preserving business records photographically, with film and equipment to effectuate it.

The development of color photography by a new and permanent base material for photographic paper.

"Dupli-lized" x-ray film, which reduced the necessary exposure time and simplified radiography; and industrial x-ray film.

Introduction of supersensitive film, which immediately had a revolutionary effect on Hollywood studio technique and which was the prelude to broad improvements in all types of film.

"Fine grain" negative films and positives, which made miniature photography practicable; and fine-grain motion-picture positive film for improved sound-reproduction and picture quality.

High-speed motion-picture apparatus for detailed analysis of motion.

Advancement of precision standards in camera and lens manufacture.

Back of these noteworthy achievements stand research, manufacturing skills, the spirit of an organization that is still—as companies go—young and vigorous; and, perhaps most important, the abiding aspiration of the man who resolved to make photography easier for everybody.

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Current Assignments of A. S. C. Members

MEMBERS of the American Society of Cinematographers were engaged as Directors of Photography in the Hollywood studios during July as follows:

Columbia

Joseph Walker, "The Making of Mister," with Evelyn Keyes, Glenn Ford, Wilford Brimley.

Bernett Guffey, "The Sign of the Cross," with Susan Peters, Alexander Knox, Don Randall, Peggy Ann Garner, Althea Roberts, Dame May Whitty, Berni Lloyd.

Phil Tananaka, "The Crime Doctor's Gamble," with Warner Baxter, Micheline Crenel, Stephen Gracy, Roger Davis.

Charles Lawton, Jr., "The Black Arrow," with Louis Hayward, Janet Blair, George Macready, Edgar Buchanan.

Vincent Farmer, "It Had To Be You," with Ginger Rogers, Cornell Wilde, Ben Randall, Percy Warren, Sprague Irvington.

Fred Jackman, Jr., "The Strawberry Roan," (Crescendo) with Gene Aubrey, Glenn Henry, Jack Holt.

Republic

John Boyle, "Northwest Stampede," (Crescendo) with Joan Leslie, James Craig, Jack Oakie.

John Allen, "T-Men," with Dennis O'Keefe.

Jack Greenhalgh, "Adventures of Casanova," with Arturo de Cordoba, Noreen Nash, Lucille Bremer, Tyrone Roy, John Sutton, George Tobias, Lloyd Corrigan, Fritz Leiber.

Metropolitan-Goldwyn-Mayer

Robert Suter, "The Kismet Bandit," (Technicolor) with Frank Sinatra, Kathryn Grayson, J. Carroll Nash, Sono Osato, Mildred Natwick, Edna Skinner, Billy Gilbert, Mikhail Rasumay.

Charles Royster, "On An Island With You," (Technicolor) with Esther Williams, Peter Lawford, Jimmy Durante, Ricardo Montalban, Cyd Charisse, Xavier Cugat.

Joe Rattenberg, "Killer McCoy," with Mickey Rooney, Ann Blythe, Brian Donlevy, James Dunn.

Paul Vogel, "The High Wall," with Robert Taylor, Audrey Totter, Herbert Marshall, Warner Anderson, Vince Barnett, Marion Gries.

Ray Jose, "Vivacious," with Van Johnson, Jane Allen, Bette Craven, Una Merkel, Butch Jenkins, Richard Derr, Elizabeth Hudson.

George Polity, "If Winter Comes," with Walter Pidgeon, Deborah Kerr, Angela Lansbury, Bette Davis, Reginald Owen, Janet Leigh, Elys Williams.

Robert Flack, "Case Timberlake," with Spencer Tracy, Leta Stetter, Zachary Scott, Mary Astor, Cameron Mitchell, Albert Dekker, Margaret Lindsay.

Paramount

Charles Lang, "My Own True Love," with Phyllis Calvert, Melvyn Douglas, Wanda Hendrix, Philip Friend, Phyllis Morris.

John Seta, "Night Has a Thousand

Eyes," with Edward G. Robinson, Paul Russell, John Lund, William Demarest, Virginia Bruce, Richard Webb.

Independent

Leader White, "On Parade," (Bro-Bog Productions) with Glenn Davis, Felix (Doc) Blanchard, Tom Harner, Anne Nagel.

PRC

George Robinson, "Linda Be Good," (Carnegie Prod.) with Elise Kase, John Hubbard, Marie Wilson, Allen Novak.

Republic

Tony Cassin, "The Red Pony," (Feldman-Milner Group Prod.) with Myrna Loy, Robert Mitchell, Louis Calhern.

RKO

Nick Musuraca, "I Remember Mama," with Irene Dunne, Barbara Bel Geddes, Oscar Homolka, Philip Dorn, Sir Cedric Hardwicke.

W. Howard Greene, "That's Life," (Technicolor) (Samuel Goldwyn Prod.) with Danny Kaye, Virginia Mayo, Steve Cochran, Felix Bressart, J. Edward Bromberg, Hugh Herbert, O. Z. Whitehead, Ludwig Stössel, Henry Goodman, Tommy Dorsey, Louis Armstrong, Lionel Hampton.

Robert de Graze, "The Miracle of the Bells" (Jeane L. Lucky Prod.) with Fred MacMurray, Valli, Frank Sinatra.

George Toland, "The Bishop's Wife," (Samuel Goldwyn Prod.) with Cary Grant, Loretta Young, David Niven, Monty Woolley, Elsa Lanchester, James Cagney.

J. Roy Hunt, "Return of the Badmen," with Randolph Scott, Robert Ryan, Anne Jeffreys, Gabby Hayes, Steve Brodie, Robert Armstrong.

Sevens Guild

Walter Strong, "The Dark Road," with John Sutton, Ann Doran, Guine Williams.

Schrock

Joe August, "Portrait of Jesse," with Jennifer Jones, Joseph Cotton, Cecil Kellaway, David Wayne, Albert Sharp.

Twentieth Century-Fox

Joseph LaSalle, "The Foxes of Harrow," with Rex Harrison, Maureen O'Hara, Richard Haydn, Gene Lockhart, Barbara Brown, Victor McLaglen, Hugo Haas, Dennis Hays, Charles Irwin.

Lee Garmes, "Nightmare Alley," with Tyrone Power, Joan Blondell, Helen Walker, Colleen Gray, Ian Keith, Mike Mazurki, Taylor Holmes.

Arkin Miller, "Gentlemen's Agreement," with Gregory Peck, Dorothy McGuire, John Garfield, Anne Revere, Jane Wyatt, Celeste Holm.

Charles Clarke, "Green Grass of Wyoming," (Technicolor) with Peggy Casman, Charles Coburn, Earl Ford, Lloyd Nolan, Robert Arthur, Geraldine Wall.

Leon Sharony, "Daisy Kenyon," with Joa Crawford, Dana Andrews, Henry Fonda, Ruth Warrick, Peggy Ann Garner, Martha Stewart.

Leo Tower, "The Snake Pit," with

Olivia de Havilland, Leo Genn, Mark Stevens, Celeste Holm, Maria Gombell, Benjamin Kline, "Dangerous Years," (Sel Wurtzel Prod.) with William Hickey, Ann E. Todd, Jerome Cowan, Scotty Beckett.

United Artists

James Wong Howe, "The Tune of Your Life," (William Cagney Prod.) with James Cagney, William Bondas, Joan Cagney, Wayne Morris, James Barton, Gale Page.

Joe Valentine, "Sleep My Love," (Triangle Prod.) with Chaudette Colbert, Robert Cummings, Don Ameche, Rita Johnson, Keys Luke, Maria San Marco.

Mark Stengler, Untitled Hopalong Cassidy Production, with William Boyd, Andy Clyde, Rand Brooks, Herbert Rawlinson.

Russell Harlan, "They Passed This Way," (Enterprise Prod.) with Joel McCrea, Frances Dee, Charles Rockford, Joseph Collins.

Universal-International

Lionel Lindin, "Top Notch," (Technicolor) (George Marshall Prod.) presented by Walter Wanger with Van Heflin, Susan Hayward, Boris Karloff, Julie London, Ward Bond, Arthur Shields.

Milton Krasner, "Imagination," (Krasner Prod.) with Ronald Colman, Signe Hasso, Edmund O'Brien, Ray Collins, Philip Love.

William Daniels, "The Naked City," (Mark Hellinger Prod.) with Barry Fitzgerald, Howard Duff, Dorothy Hart, Dana Taylor, Ann Sargent.

William Miller, "The Senator Was Indiscreet," (Inter-John Prod.) with William Powell, Ella Raines, Peter Land Hayes, Arlene Whelan, Ray Collins, Cynthia Morris, Hans Coopers.

Russell Melfy, "Mortal Cade," with Charles Boyer, Ann Rhye, Sir Cedric Hardwicke, Jessica Tandy, Rachel Kempson, Nigel Bruce.

Frank Flann, "The Eagle," (Faybaker Company Prod.) with Douglas Fairbanks, Jr., Marie Martin, Paula Crest, Nigel Bruce, Robert Coote, Henry Daniel.

Warners

Ted McCord, "The Treasure of Sierra Madre," with Humphrey Bogart, Walter Huston, Bruce Bennett, Tom Holt, Barton MacLane.

Sid Hickox, "Silver River," with Errol Flynn, Ann Sheridan, Thomas Mitchell, Tom D'Andrea, Barton MacLane.

Ernest Haller, "Ever the Beginning," (United States Pictures) with Lili Palmer, Sam Wanamaker, Akim Tamiroff, Gale Robbins, Hugo Haas, Denny Baker, Stella Adler.

Karl Freund, "Mary Hayes," with Ronald Reagan, Shirley Temple, Romy Calahan, Charles Kemper, Kathryn Card.

Elwood Hredell, "Rescue in High C," (Technicolor) (Michael Curtis Prod.) with Jack Carson, Janis Paige, Don DeFore, Oscar Levant, S. Z. Sakall, Deem Dry.

Carl Guthrie, "Need For Each Other," with Joyce Reynolds, Robert Nathan, Cecil Kellaway, Ernest Truex.

Reference Books On Motion Picture Photography and Production Procedure

SO many inquiries have been received during the past several months for lists of reference books dealing with motion picture photography, production, and related practices, that we will detail in this article a number of books that have been—and still are being—used as reference guides for the fundamentals and advanced technique of motion picture photography.

A.S.C. Annual

Although the *Cinematographic Annual* was published back in 1930 by the American Society of Cinematographers, its 600-odd pages contain much valuable information on the basic principles of motion picture photography, together with related interests of motion picture production. It might be pointed out that many subjects contained in that work have become outmoded or outdated during the intervening years, but there is still sufficient information within the covers for the price of \$5.75 domestic, and \$2.60 foreign (including postage) for the few dozen copies that are still available. Many public libraries in larger cities have copies on file for reference.

SNPE Publication

At the 1942 Spring Technical Conference of the Society of Motion Picture Engineers at Hollywood, a symposium of papers was presented on the then current technical practices in the motion picture industry as applied to actual motion picture production. Subsequently, the papers were assembled and issued in a 158 page booklet under title of "The Technique of Motion Picture Production."

"Cinematography in the Hollywood Studios" is covered extensively in three articles: "Black and White Cinematography," by John W. Boyle, A.S.C.; "Putting Clouds into Exterior Scenes," by Charles G. Clarke, A.S.C.; and "Technicolor Cinematography," by Winston Hoch, A.S.C. Farout Elouart, A.S.C. contributes an article on "The Paramount Transparency Department," while Fred Soren describes "Special Photographic Effects."

Other papers include: "Technology in the Art of Producing Motion Pictures" by Leon S. Becker, "Illumination in Motion Picture Production" by H. G. Linderman, C. W. Mandley, and A. Rodgers, laboratory practices, various phases of sound recording, and editing and editing of motion pictures.

For those who might be interested in acquiring copies of the SNPE book, we direct inquiries to the Society of Motion Picture Engineers, Hotel Pennsylvania, New York 1, N. Y.

Other Reference Works

Unlike other art forms, that of cinematography apparently does not yet have—in one complete volume—all of the essential basic fundamentals. Perhaps a reason for this is the rapid progress being made in both equipment, new films and practices.

Without our recommendations wholly or in part, we are, however, printing the resulting list of reference works as required in the course of cinematography at the University of Southern California. That list comprises: "The Art of Photography," by Miles and Brinnant, "Cinematography and Talking," by Cameron and Doherty, "How They Make a Motion Picture," by Handley and Froulin, "Cinematography Design," by Harker, "Colour Cinematography," by Klein, "Pictorial Beauty on the Screen," "The Cinema Today," by Spencer and Wiley, "The Kingdom of the Camera," by Baker, "The American Film," by Rideson, "We Make the Movies," by Nurnberg, "Documentary Film," by Bethel, "Behind the Screen," by Watts, "A Grammar of the Film," by Spottiswoode, "Talking Pictures," by Keeling, "Footnotes to the Film," by Derry, "The Film Sense," by Eisenstein, "The Cinema as a Graphic Art," by Nilsen, "Moving Pictures," by F. A. Talbot, "Motion Picture Work," by David S. Hullfish, and "Theory of the Photographic Process," by C. E. Kenneth Mees. Many of these publications will undoubtedly be found in public libraries for reference purposes.

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